Listing of Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

1. (Original) A method for measuring characteristics of nanoscopic objects using detection of photons emitted from the objects, the method comprising:

moving a tip of a probe coupled to a cantilever toward a feature of a sample to influence a rate of emission from the feature of the sample;

illuminating using a first intensity level of electromagnetic energy the feature of the sample during a first predetermined portion of movement of the cantilever to capture a signal at a detector from the sample; and

changing the first intensity level to a second intensity level during a second predetermined portion of movement of the cantilever.

2. (Original) The method of claim 1 wherein the second intensity level is lower than the first intensity level.

3. (Original) The method of claim 1 wherein the second intensity level is near zero.

4. (Original) The method of claim 1 wherein the movement of the cantilever is a portion of an oscillating action of the cantilever.

5. (Original) The method of claim 1 whereupon changing the first intensity level to the second intensity level, the second intensity level being lower than the first intensity level changes a capability of emitting photons from the feature of the sample.

6. (Original) The method of claim 5 wherein the capability of emitting photons is increased.

7. (Original) The method of claim 1 wherein the changing is provided using a switch that blocks an illumination of the first intensity level.

8. (Original) The method of claim 1 wherein the changing is provided by an electro-optic modulator material that blocks an illumination of the first intensity level to cause the second intensity level.

9. (Original) The method of claim 1 wherein the changing is provided by an acousto-optic modulator material, the acousto-optic modulator material being adapted to block an illumination at the first intensity level to cause the second intensity level.

10. (Original) The method of claim 1 wherein the sample is a fluorophore.

11. (Original) The method of claim 1 wherein the sample is selected from a collection of fluorophores, a fluorescent particle, or a bead.

12. (Original) The method of claim 1 wherein the sample comprises a biological molecule coupled to a fluorophore, the sample having a pre-determined life.

13. (Original) The method of claim 1 wherein the sample is a quantum dot or other solid state entity with tunable fluorescent property.

14. (Original) The method of claim 1 wherein the sample is a biological molecule coupled to a quantum dot or other solid state entity.

15. (Original) The method of claim 1 wherein the sample is a collection of quantum dots or other solid-state entities.

16. (Original) The method of claim 1 wherein the sample is a biological molecule coupled to a plurality of quantum dots or other solid-state entities.

17. (Original) A system for measuring characteristics of nanoscopic objects using detection of photons emitted from the objects, the system comprising one or more computer memories, the one or more computer memories including:

a first code directed to cause movement of a tip of a probe coupled to a cantilever member toward a feature of a sample to influence a rate of emission from the feature of the sample;

a second code directed to apply illumination using a first intensity level of electromagnetic energy to the feature of the sample during a first predetermined portion of movement of the cantilever member to capture a signal from the feature at a detector from the sample; and

a third code directed to output a control signal to switch the first intensity level to a second intensity level during a second predetermined portion of movement of the cantilever member.

18. (Original) The system of claim 17 further comprising a fourth code directed to provide a control signal to initiate a relative motion between a region of illumination and a portion of the sample.

19. (Original) The system of claim 18 further comprising a fifth code directed to provide a control signal to initiate a relative motion between a region of the cantilever member and a portion of the sample.

20. (Original) The system of claim 17 wherein the second intensity level is lower than the first intensity level.

21. (Original) The system of claim 17 wherein the second intensity level is zero.

22. (Original) The system of claim 17 wherein the movement of the cantilever is a portion of an oscillating action of the cantilever.

23. (Original) The system of claim 17 whereupon changing the first intensity level to the second intensity level, the second intensity level being lower than the first intensity level changes a capability of emitting photons from the feature of the sample.

24. (Original) The system of claim 15 wherein the capability of emitting photons is increased.

25. (Original) The system of claim 17 wherein the third code directed to switch is coupled to a switch means that blocks an illumination at the first intensity level.

26. (Original) The system of claim 17 wherein the third code directed is coupled to an electro-optic modulator material that blocks an illumination of the first intensity level to cause the second intensity level.

27. (Original) The system of claim 17 wherein the third code directed is coupled to an acousto-optic modulator material that blocks an illumination of the first intensity level to cause the second intensity level.

28. (Original) The system of claim 17 wherein the sample comprises a biological molecule coupled to a fluorophore, the sample having a pre-determined life.

29. (Original) The system of claim 17 wherein the sample is a quantum dot or other solid-state entity with tunable fluorescent property.

30. (Original) The system of claim 17 wherein the first code, second code, and third code are provided on a fixed memory.

31.-120. Canceled.

121. (Previously Presented) A method for measuring a characteristic of objects using detection of photons associated with objects, the method comprising:

maintaining a sample on a stage, the sample including a feature to be imaged;

providing a tip of a probe to be movable toward the feature of the sample to influence an emission of electromagnetic energy associated with the feature of the sample;

illuminating a feature of a sample using electromagnetic energy comprising a first intensity level;

capturing a first signal associated with the feature during a first portion of movement of the tip during a portion of time associated with illuminating the feature of the sample with the electromagnetic energy comprising the first intensity level;

moving the tip of the probe toward a vicinity of the feature of the sample during a second portion of movement of the tip;

providing electromagnetic energy comprising a second intensity level as the tip of the probe moves toward the vicinity of the feature of the sample during the second portion of movement of the tip to cause enhancement of the tip of the probe;

determining a spatial coordinate of the stage on which the sample has maintained;

determining a distance of the tip of the probe relative to the feature of the sample;

capturing a second signal associated with the feature; and

forming an image associated with at least the second signal associated with the feature of the sample.

122. (Previously Presented) The method of claim 121 wherein the second intensity level is associated with an enhancement or quenching influence of the feature of the sample.

123. (Previously Presented) The method of claim 121 wherein the first portion and the second portion are provided within an oscillation cycle of the tip of the probe.

124. (Previously Presented) The method of claim 123 wherein the tip of the probe is maintained in gas and wherein the oscillation cycle is characterized by a frequency ranging from about 50 kilohertz to 250 kilohertz.

125. (Previously Presented) The method of claim 121 wherein the second intensity level is lower than the first intensity level.

126. (Previously Presented) The method of claim 121 wherein the vicinity of the feature is in contact with the feature.

127. (Previously Presented) The method of claim 121 wherein the capturing the first signal and the capturing the second signal are among a plurality of capturing steps.

128. (Previously Presented) The method of claim 121 further comprising scanning the tip of the probe along a spatial surface region of the sample.

129. (Previously Presented) The method of claim 121 wherein the first signal is associated with a plurality of photons emitted from the feature of the sample.

130. (Previously Presented) The method of claim 121 wherein the second signal is associated with a plurality of photons emitted from the feature of the sample, the second signal being greater than the first signal.

131. (Previously Presented) The method of claim 121 wherein the moving the tip of the probe comprises a portion of an tapping mode of operation.

132. (Previously Presented) The method of claim 121 wherein the sample and tip are maintained in a liquid.

133. (Previously Presented) The method of claim 121 wherein the sample and tip are maintained in an inert gas.

134. (Previously Presented) A method for measuring a characteristic of objects using detection of photons associated with objects, the method comprising:

providing a liquid environment or gas environment;

providing a tip of a probe to be movable toward a feature of a sample in the liquid or gas environment to influence an emission of electromagnetic energy associated with the feature of the sample, the feature and the sample being maintained on a stage;

illuminating the tip of the probe using electromagnetic energy comprising a first intensity level as the tip of the probe moves toward the feature of the sample;

capturing a first signal associated with the feature during a first portion of movement of the tip during a portion of time associated with illuminating the tip of the probe with the electromagnetic energy comprising the first intensity level;

moving the tip of the probe toward a vicinity of the feature of the sample during a second portion of movement of the tip;

providing electromagnetic energy comprising a second intensity level associated with the feature of the sample as the tip of the probe moves toward the vicinity of the feature of the sample during the second portion of movement of the tip to cause enhancement of the tip of the probe to the second intensity level;

determining a spatial coordinate of the stage on which the sample has maintained;

determining a distance of the tip of the probe relative to the feature of the sample; and

capturing a second signal associated with the feature to create an image of the feature of the sample.

135. (Previously Presented) The method of claim 134 wherein the second intensity level is associated with an enhancement or quenching influence of the feature of the sample.

136. (Previously Presented) The method of claim 134 wherein the first portion and the second portion are provided within an oscillation cycle of the tip of the probe.

137. (Previously Presented) The method of claim 136 wherein the oscillation cycle is characterized by a predetermined frequency.

138. (Previously Presented) The method of claim 134 wherein the second intensity level is lower than the first intensity level.

139. (Previously Presented) The method of claim 134 wherein the vicinity of the feature is when the tip is in contact with the feature.

140. (Previously Presented) The method of claim 134 wherein the capturing the first signal and the capturing the second signal are among a plurality of capturing steps.

141. (Previously Presented) The method of claim 134 further comprising scanning the tip of the probe along a spatial surface region of the sample.

142. (Previously Presented) The method of claim 134 wherein the first signal is associated with a plurality of photons emitted from the feature of the sample.

143. (Previously Presented) The method of claim 134 wherein the second signal is associated with a plurality of photons emitted from the feature of the sample, the second signal being greater than the first signal.

144. (Previously Presented) The method of claim 134 wherein the moving the tip of the probe comprises a portion of an tapping mode of operation.

145. (Previously Presented) A method for measuring characteristics of nanoscopic objects using detection of photons emitted from the objects, the method comprising:

moving a tip of a probe toward a feature of a sample to influence a rate of emission from the feature of the sample;

capturing a signal associated with illumination of a first intensity level of electromagnetic energy associated with the feature of the sample during a first portion of movement of the probe at a detector;

changing the first intensity level to a second intensity level during a second portion of movement of the probe; and

forming an image based upon at least the second intensity level;

whereupon the second intensity is caused by an enhancement of the tip of the probe as the tip of the probe moves within a vicinity of the feature of the sample.